CHARLOTTE PIPE AND FOUNDRY COMPANY®

You can't beat the system.®

Submittal Package PVC Schedule 40 DWV System

(Updated October 17, 2019)

SUBMITTAL PACKAGE

Table of Contents for PVC Schedule 40 DWV Submittal Package

Page

SUBMITTAL FOR CHARLOTTE PIPE®
PVC SCHEDULE 40 SOLID WALL PIPE AND PVC DWV FITTING SYSTEM

Date: _____

Job Name: _____ Location: _____

Engineer: _____ Contractor: _____

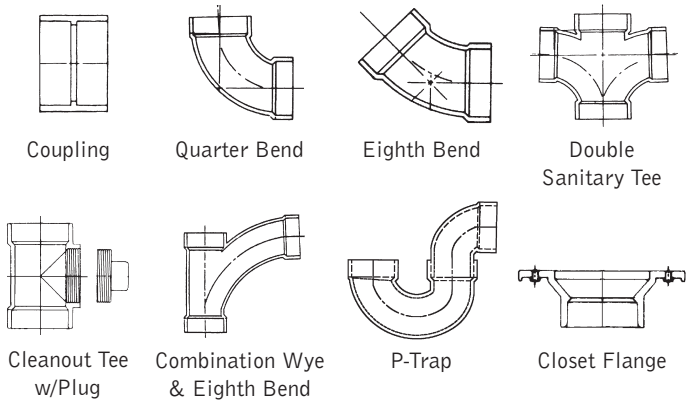
Scope:
This specification covers PVC Schedule 40 solid wall pipe and PVC DWV fittings used in sanitary drain, waste and vent (DWV), sewer and storm drainage applications. This system is intended for use in non-pressure applications where the operating temperature will not exceed 140° F.

Specification:
Pipe shall be manufactured from virgin rigid PVC (polyvinyl chloride) vinyl compounds with a cell class of 12454 as identified in ASTM D 1784. PVC Schedule 40 pipe shall be Iron Pipe Size (IPS) conforming to ASTM D 1785 and ASTM D 2665. Injection molded PVC DWV fittings shall conform to ASTM D 2665. Fabricated PVC DWV fittings shall conform to ASTM F 1866. All pipe and fittings shall be manufactured in the United States. All systems shall utilize a separate waste and vent system. Pipe and fittings shall conform to NSF International Standard 14.

Installation:
Installation shall comply with the latest installation instructions published by Charlotte Pipe and Foundry and shall conform to all applicable plumbing, fire, and building code requirements. Buried pipe shall be installed in accordance with ASTM D 2321 and ASTM F 1668. Solvent cement joints shall be made in a two-step process with primer conforming to ASTM F 656 and solvent cement conforming to ASTM D 2564. The system shall be protected from chemical agents, fire-stopping materials, thread sealant, plasticized-vinyl products or other aggressive chemical agents not compatible with PVC compounds. The system shall be hydrostatically tested after installation.
WARNING! Never test with or transport/store compressed air or gas in PVC pipe or fittings. Doing so can result in explosive failures and cause severe injury or death.

Referenced Standards:

ASTM D 1784:	Rigid Vinyl Compounds
ASTM D 1785:	PVC Plastic Pipe, Schedule 40
ASTM D 2665:	PVC Drain, Waste and Vent Pipe and Fittings
ASTM D 2564:	Solvent Cements for PVC Pipe and Fittings
ASTM D 2321:	Underground Installation of Thermoplastic Pipe (non-pressure applications)
ASTM F 656:	Primers for PVC Pipe and Fittings
ASTM F 1668:	Procedures for Buried Plastic Pipe
ASTM F 1866:	Fabricated PVC DWV Fittings
NSF Standard 14:	Plastic Piping Components and Related Materials



Not all fitting patterns shown

MADE IN USA

PVC Schedule 40 DWV Pipe

PVC Schedule 40 DWV Pipe

NSF

PVC SCHEDULE 40 (WHITE)		PLAIN END		PVC 1120		ASTM D 2665
PART NO.	NOM. SIZE	UPC # 611942-	QTY. PER SKID	AVG. OD (IN.)	MIN. WALL (IN.)	WT. PER 100 FT. (LBS.)
PVC 7100*	1¼″x10′	03945	2120′	1.660	.140	42.4
PVC 7100*	1¼″x20′	03946	4240′	1.660	.140	42.4
PVC 7112*	1½″x10′	03947	1650′	1.900	.145	51.8
PVC 7112*	1½″x20′	03948	3300′	1.900	.145	51.8
PVC 7200*	2″x10′	03949	1110′	2.375	.154	69.5
PVC 7200*	2″x20′	03950	2220′	2.375	.154	69.5
PVC 7300*	3″x10′	03951	1130′	3.500	.216	144.2
PVC 7300*	3″x20′	03952	1000′	3.500	.216	144.2
PVC 7400†	4″x10′	03953	670′	4.500	.237	205.5
PVC 7400†	4″x20′	03954	1340′	4.500	.237	205.5
PVC 7500†	5″x20′	04837	760′	5.563	.258	272.5
PVC 7600†	6″x10′	03955	330′	6.625	.280	361.2
PVC 7600†	6″x20′	03956	660′	6.625	.280	361.2
PVC 7800†	8″x10′	13087	180′	8.625	.322	543.6
PVC 7800†	8″x20′	03958	360′	8.625	.322	543.6
PVC 7910†	10″x20′	03959	220′	10.750	.365	770.7
PVC 7912†	12″x20′	03961	120′	12.750	.406	1019.0
PVC 7914†	14″x20′	04862	60′	14.000	.437	1205.0
PVC 7916†	16″x20′	04918	60′	16.000	.500	1575.7

*** Dual Marked ASTM D 1785 & ASTM D 2665.**
† Triple Marked ASTM D 1785 & ASTM D 2665 & ASTM F 480.

Charlotte Pipe and Foundry Company • P.O. Box 35430 Charlotte, NC 28235 • (800) 438-6091 • www.charlottepipe.com

Product Certification

This is to certify that all Plastic Pipe and Fittings manufactured by Charlotte Pipe and Foundry Company are manufactured in the United States and conform to the following standards:

PVC SCH. 40 SOLID WALL PIPE
ASTM D 1784, ASTM D 1785, ASTM D 2665
FHA UM 79a
FEDERAL SPECIFICATION L-P-320a
NSF STANDARD 14 AND 61

PVC SCH. 40 DWV CELLULAR CORE PIPE
ASTM D 4396, ASTM F 891
NSF STANDARD NO. 14

PVC SCH. 40 DWV FITTINGS
ASTM D 1784, ASTM D 2665, ASTM D 3311,
ASTM F1866
FHA UM 79a
FEDERAL SPECIFICATION L-P-320a
NSF STANDARD NO. 14

ConnecTite® PUSH-FIT DWV FITTINGS
ASME A112.4.4, IAPMO IGC 334
NSF STANDARD NO. 14

PVC SDR-21 AND SDR-26 PRESSURE PIPE
ASTM D 1784, ASTM D 2241
NSF STANDARD NO. 14 AND 61

PVC SCH. 40 PRESSURE FITTINGS
ASTM D 1784, ASTM D 2466
NSF STANDARD 14 AND 61

PVC SCH. 40 WELL CASING PIPE
ASTM D 1784, ASTM F 480
NSF STANDARD NO. 14 AND 61

PVC SCH. 80 PIPE
ASTM D 1784, ASTM D 1785
NSF STANDARD NO. 14 AND 61

PVC SCH. 80 FITTINGS
ASTM D 1784, ASTM D 2467
ASTM D 2464 ASTM F 1970
NSF STANDARD NO. 14 AND 61

PVC SDR 35 SEWER MAIN PIPE
ASTM D 1784, ASTM D 3034, SDR 35
ASTM D 3212, ASTM F 477

PVC SEWER AND DRAIN PIPE
ASTM D 1784, ASTM D 2729

PVC THIN WALL PIPE & FITTINGS
ASTM D 1784, ASTM D 2949
NSF STANDARD NO. 14

CPVC FLOWGUARD GOLD® CTS PIPE & FITTINGS
ASTM D 1784, ASTM D 2846
FHA UM-61a
NSF STANDARD NO. 14 AND 61
CSA LISTED ON SPECIFIED ITEMS

CPVC CHEMDRAIN® SCH. 40 PIPE & FITTINGS
ASTM D 1784, ASTM F 2618
NSF STANDARD 14

ABS SCH. 40 DWV CELLULAR CORE PIPE
ASTM D 3965, ASTM F 628
NSF STANDARD NO. 14

ABS PLUS® SCH. 40 DWV CELLULAR CORE PIPE
ASTM D 3965, ASTM D 4396, ASTM F 1488

ABS SCH. 40 DWV FITTINGS
ASTM D 3965, ASTM D 2661, ASTM D 3311
FHA UM 79a
FEDERAL SPECIFICATION L-P-322b
NSF STANDARD NO. 14

CHARLOTTE PIPE AND FOUNDRY COMPANY

Physical Properties of Charlotte Pipe® ABS and PVC Materials*

PROPERTY	UNITS	ABS	ASTM NO.		PVC	ASTM NO.
Specific Gravity	g/cc	1.05	D 792		1.40	D 792
Tensile Strength (73°F) Minimum	Psi	4,500	D 638		7,000	D 638
Modulus of Elasticity in Tension (73°F) Minimum	Psi	240,000	D 638		400,000	D 638
Flexural Strength (73°F)	Psi	10,585	D 790		14,000	D 790
Izod Impact (notched at 73°F) Minimum	ft lb/ in. of notch	6.00	D 256		0.65	D 256
Hardness (Durometer D)		70	D 2240		80 ± 3	D 2240
Hardness (Rockwell R)		100	D 785		110 - 120	D 785
Compressive Strength (73°F)	Psi	7,000	D 695		9,600	D 695
Hydrostatic Design Stress	Psi	N/A			2,000	D 1598
Coefficient of Linear Expansion	in./ in./ °F	5.5×10^{-5}	D 696		3.0×10^{-5}	D 696
Heat Distortion Temperature at 264 psi Minimum	degrees F	180	D 648		158	D 648
Coefficient of Thermal Conductivity	BTU/ hr/sq ft/ °F/ in.	1.1	C 177		1.2	C 177
Specific Heat	BTU/ °F/lb	0.35	D 2766		0.25	D 2766
Water Absorption (24 hrs at 73°F)	% weight gain	0.40	D 570		.05	D 570
Cell Classification - Pipe		42222	D 3965		12454	D 1784
Cell Classification - Fittings		32222	D 3965		12454	D 1784
Burning Rate					Self Ext.	D 635

*Above data is based upon information provided by the raw material manufacturers. It should be used only as a recommendation and not as a guarantee of performance.

Solvent Cements

Pipe and Fitting System	Diameter (in.)	Solvent Cement Standard	Cement Color (common usage, check local code)	Description	Primer (common usage, check local code)
ABS DWV	1½ - 6	ASTM D 2235	Black	Regular or Medium-Bodied	Not Recommended
ABS Plus® Foam Core Pipe	1½ - 4	ASTM D 2235	Black	Regular or Medium-Bodied	Not Recommended
FlowGuard Gold® CTS CPVC	½ - 2	ASTM F 493	Yellow	Regular-Bodied	Optional
CPVC Sch. 80	½ - 2	ASTM F 493	IPS 714 or Oatey CPVC Heavy Duty Orange	Heavy-Bodied	IPS P-70 or Oatey Industrial Grade
CPVC Sch. 80	2½ - 8	ASTM F 493	IPS 714 or Oatey CPVC Heavy Duty Orange	Heavy-Bodied	IPS P-70 or Oatey Industrial Grade
CPVC Sch. 40 ChemDrain	1¼ - 8	ASTM F 493	ChemDrain Mustard Yellow (Required)	Heavy-Bodied	6" and larger: IPS P-70 or Oatey Industrial Grade required
PVC DWV or Sch. 40 Pressure	½ - 4	ASTM D 2564	Clear	Regular or Medium-Bodied	Required ASTM F 656
PVC DWV or Sch. 40 Pressure	6 - 16	ASTM D 2564	Clear or Grey	Medium or Heavy-Bodied	Required ASTM F 656
PVC Sch. 80	¼ - 2	ASTM D 2564	Grey	Medium or Heavy-Bodied	Required ASTM F 656
PVC Sch. 80	2½ - 16	ASTM D 2564	Grey	Heavy-Bodied	IPS P-70 or Oatey Industrial Grade

NOTICE: Aerosol or spray-on type primers/solvent cements are not recommended. The practice of aggressively scouring the pipe and fittings with both primer and solvent cement is an integral part of the joining process. Not working the primer or solvent cement into the pipe or fitting could cause potential system failure or property damage.

⚠ WARNING

Primers and cements are extremely flammable and may be explosive. Do not store or use near open flame or elevated temperatures, which may result in injury or death.

- Solvent fumes created during the joining process are heavier than air and may be trapped in newly installed piping systems.
- Ignition of the solvent vapors caused by spark or flame may result in injury or death from explosion or fire.
- Read and obey all manufacturers' warnings and any instructions pertaining to primers and cements.
- Provide adequate ventilation to reduce fire hazard and to minimize inhalation of solvent vapors when working with cements, primers and new piping systems.

Applicator Types

Nominal Pipe Size (in.)	Applicator Type		
	Dauber	Brush Width (in.)	Swab Length (in.)
¼	A	½	NR
⅜	A	½	NR
½	A	½	NR
¾	A	1	NR
1	A	1	NR
1¼	A	1	NR
1½	A	1 - 1½	NR
2	A	1 - 1½	NR
2½	NR	1½ - 2	NR
3	NR	1½ - 2½	NR
4	NR	2 - 3	3
6	NR	3 - 5	3
8	NR	4 - 6	7
10	NR	6 - 8	7
12	NR	6 - 8	7
14	NR	7 - 8	7
16	NR	8+	8

A = Acceptable NR = Not Recommended

NOTICE: Rollers are not recommended.

Chemical Resistance

⚠ CAUTION

PVC, ABS and CPVC piping systems have very different chemical resistance. Review manufacturer's literature for all chemicals coming into contact with the piping materials prior to use.

The following table gives the chemical resistance of ABS, PVC and CPVC thermoplastic piping materials and three commonly used seal materials. The information shown is based upon laboratory tests conducted by the manufacturers of the materials, and it is intended to provide a general guideline on the resistance of these materials to various chemicals. **NOTICE:** This table is not a guarantee, and any piping systems using products made of these materials should be tested under actual service conditions to determine their suitability for a particular purpose. See website for most current data: www.charlottepipe.com

Number = Maximum Recommended Temp. (°F)** CF = Consult Factory NR = Not Recommended • • = Incomplete Data

Chemical Name	Pipe & Fitting Materials Recommended Max. Temp (°F)			Seal Materials Recommended Max. Temp. (°F)		
	ABS	PVC	CPVC	Viton ®	EPDM	Neoprene
Acetaldehyde	NR	NR	NR	NR	200	NR
Acetamide	120	• •	• •	NR	200	NR
Acetate Solvent, Crude	NR	NR	NR	NR	200	NR
Acetate Solvent, Pure	NR	NR	NR	NR	200	NR
Acetic Acid, 10%	120	140‡	180‡	73	200	NR
Acetic Acid, 20%	NR	140‡	180‡	NR	200	NR
Acetic Acid, 50%	NR	NR	NR	NR	140	NR
Acetic Acid, 80%	NR	NR	NR	NR	140	NR
Acetic Acid, Glacial	NR	NR	NR	NR	73	NR
Acetic Anhydride	NR	NR	NR	NR	NR	73
Acetone	NR	NR	NR	NR	200	NR
Acetonitrile	NR	NR	NR	NR	NR	73
Acetophenone	NR	NR	NR	NR	140	NR
Acetyl Chloride	NR	NR	NR	185	NR	NR
Acetylene	140§	140§	180§	200	200	73
Acetyl Nitrile	NR	NR	NR	NR	NR	NR
Acrylic Acid	NR	NR	NR	NR	NR	NR
Acrylonitrile	NR	73	NR	NR	100	NR
Adipic Acid (Sat'd)	• •	140	180	160	140	140
Alcohol, Allyl	NR	NR	NR	73	73	73
Alcohol, Amyl	NR	NR	NR	160	200	140
Alcohol, Benzyl	NR	NR	NR	140	NR	NR
Alcohol, Butyl	NR	100	NR	200	140	140
Alcohol, Diacetone	NR	NR	NR	NR	70	NR
Alcohol, Ethyl (Ethanol) Up to 5%	73	140	180	200	200	160
Alcohol, Ethyl (Ethanol) Over 5%	NR	140	180	NR	200	140
Alcohol, Hexyl (Hexanol)	NR	100	NR	200	NR	NR
Alcohol, Isopropyl (Isopropanol)	NR	140	NR	160	160	73
Alcohol, Methyl (Methanol)	NR	140	140	NR	160	160
Alcohol, Octyl (1-n-Octanol)	NR	100	73	73	NR	NR
Alcohol, Propyl (Propanol)	NR	140	NR	200	200	140
Allyl Alcohol	NR	NR	NR	100	70	73
Allyl Chloride	NR	NR	NR	NR	NR	NR
Alums	140	140	180	200	100	100
Aluminum Acetate	140	• •	180	NR	200	NR

Acrylonitrile-Butadiene-Styrene Polyvinyl Chloride Type 1 Grade 1 Chlorinated Polyvinyl Chloride Type IV Grade 1
Flourocarbon Elastomer (Viton ® is a registered trademark of the DuPont Co.) Ethylene Propylene Diene Monomer
** Maximum recommended temperature, for chemical resistance, under normal conditions. § Non-pressure, vent-only, applications when chemical is in gas form.
‡ Must use solvent cement specially formulated for hypochlorite or caustic chemical service (IPS Weld-On 724 or equal).

Chemical Resistance

⚠ CAUTION

PVC, ABS and CPVC piping systems have very different chemical resistance. Review manufacturer's literature for all chemicals coming into contact with the piping materials prior to use.

The following table gives the chemical resistance of ABS, PVC and CPVC thermoplastic piping materials and three commonly used seal materials. The information shown is based upon laboratory tests conducted by the manufacturers of the materials, and it is intended to provide a general guideline on the resistance of these materials to various chemicals. **NOTICE:** This table is not a guarantee, and any piping systems using products made of these materials should be tested under actual service conditions to determine their suitability for a particular purpose. See website for most current data: www.charlottepipe.com

Number = Maximum Recommended Temp. (°F)** CF = Consult Factory NR = Not Recommended • • = Incomplete Data

Chemical Name	Pipe & Fitting Materials Recommended Max. Temp (°F)			Seal Materials Recommended Max. Temp. (°F)		
	ABS	PVC	CPVC	Viton ®	EPDM	Neoprene
Aluminum Ammonium	• •	140	180	200	200	160
Aluminum Chloride	140	140	180	200	200	160
Aluminum Chrome	• •	140	180	200	200	160
Aluminum Fluoride	NR	73	180	200	200	160
Aluminum Hydroxide	140	140‡	180‡	200	200	100
Aluminum Nitrate	140	140	180	100	200	100
Aluminum Oxychloride	140	140	180	NR	• •	• •
Aluminum Potassium Sulfate	140	140	180	200	200	160
Aluminum Sulfate	140	140	180	185	200	140
Amines, General	NR	NR	NR	NR	NR	NR
Ammonia, Aqueous	NR	140	NR	NR	175	150
Ammonia, Gas	140§	140§	NR	NR	140	140
Ammonia, Aqua, 10%	• •	73	NR	NR	140	• •
Ammonia, (25% Aqueous Solution)	140	NR	NR	NR	140	• •
Ammonia Hydroxide	73	100‡	NR	NR	175	150
Ammonia Liquid (Concentrated)	NR	NR	NR	NR	140	73
Ammonium Acetate	• •	140	180	73	140	140
Ammonium Benzoate	• •	• •	180	• •	• •	• •
Ammonium Bifluoride	• •	140	180	200	200	• •
Ammonium Bisulfide	140	140	180	• •	• •	• •
Ammonium Carbonate	140	140	180	200	200	140
Ammonium Chloride	120	140	180	200	200	160
Ammonium Citrate	120	• •	180	NR	73	73
Ammonium Dichromate	120	73	• •	NR	73	100
Ammonium Fluoride, 10%	120	140	180	140	200	100
Ammonium Fluoride, 25%	120	73	180	140	200	73
Ammonium Hydroxide, <10%	73	140‡	NR	70	200	160
Ammonium Hydroxide, >10%	73	73‡	NR	NR	200	150
Ammonium Metaphosphate.	120	140	180	200	200	• •
Ammonium Nitrate	120	140	180	100	200	160
Ammonium Persulphate	120	140	73	• •	200	73
Ammonium Phospate	120	140	73	185	200	140
Ammonium Sulfamate	120	• •	180	• •	• •	• •
Ammonium Sulfate	120	140	180	200	200	160
Ammonium Sulfide	120	73	180	200	200	• •

Acrylonitrile-Butadiene-Styrene Polyvinyl Chloride Type 1 Grade 1 Chlorinated Polyvinyl Chloride Type IV Grade 1
Flourocarbon Elastomer (Viton ® is a registered trademark of the DuPont Co.) Ethylene Propylene Diene Monomer
** Maximum recommended temperature, for chemical resistance, under normal conditions. § Non-pressure, vent-only, applications when chemical is in gas form.
‡ Must use solvent cement specially formulated for hypochlorite or caustic chemical service (IPS Weld-On 724 or equal).

Chemical Resistance

The following table gives the chemical resistance of ABS, PVC and CPVC thermoplastic piping materials and three commonly used seal materials. The information shown is based upon laboratory tests conducted by the manufacturers of the materials, and it is intended to provide a general guideline on the resistance of these materials to various chemicals. **NOTICE:** This table is not a guarantee, and any piping systems using products made of these materials should be tested under actual service conditions to determine their suitability for a particular purpose. See website for most current data: www.charlottepipe.com

Number = Maximum Recommended Temp. (°F)** CF = Consult Factory NR = Not Recommended • • = Incomplete Data

Chemical Name	Pipe & Fitting Materials Recommended Max. Temp (°F)			Seal Materials Recommended Max. Temp. (°F)		
	ABS	PVC	CPVC	Viton ®	EPDM	Neoprene
Ammonium Thiocyanate	120	140	180	185	• •	73
Ammonium Tartrate	120	140	180	• •	• •	• •
Amyl Acetate	NR	NR	NR	NR	73	NR
Alcohol, Amyl	NR	NR	NR	185	200	140
Amyl Chloride	NR	NR	NR	200	NR	NR
Aniline	NR	NR	NR	NR	140	NR
Aniline Chlorohydrate	NR	NR	• •	• •	• •	• •
Aniline Hydrochloride	NR	NR	NR	185	• •	NR
Anthraquinone Sulfonic Acid	• •	140	• •	200	• •	• •
Anti-Freeze (See Alcohols, Glycols & Glycerin)						
Antimony Trichloride	• •	140	180	185	140	140
Aqua Regia	NR	NR	73	100	NR	NR
Aromatic Hydrocarbons	NR	NR	NR	73	NR	NR
Argon	• •	• •	• •	200	200	100
Arsenic Acid	• •	140	73	200	185	NR
Aryl Sulfonic Acid	• •	140	• •	185	140	• •
Asphalt	NR	NR	NR	180	NR	NR
Barium Carbonate	120	140	180	200	200	160
Barium Chloride	120	140	180	200	200	160
Barium Hydroxide	120	140	180	200	180	150
Barium Nitrate	120	73	180	200	200	160
Barium Sulfate	120	140	180	200	200	160
Barium Sulfide	120	140	180	200	140	160
Beer	120	140	180	200	200	140
Beet Sugar Liquids	120	140	180	185	200	160
Benzaldehyde	NR	NR	NR	NR	200	NR
Benzalkonium Chloride	NR	NR	NR	• •	• •	• •
Benzene	NR	NR	NR	150	NR	NR
Benzene, Benzol	NR	NR	NR	200	200	• •
Benzene Sulfonic Acid	NR	NR	NR	185	NR	100
Benzoic Acid, (Sat'd)	140	140	73	• •	NR	160
Benzyl Chloride	NR	NR	NR	200	NR	NR
Benzyl Alcohol	NR	NR	NR	140	NR	NR
Biodiesel Fuel	NR	73	NR	200	NR	NR
Bismuth Carbonate	140	140	180	• •	• •	73

Acrylonitrile-Butadiene-Styrene Polyvinyl Chloride Type 1 Grade 1 Chlorinated Polyvinyl Chloride Type IV Grade 1
Flourocarbon Elastomer (Viton ® is a registered trademark of the DuPont Co.) Ethylene Propylene Diene Monomer
** Maximum recommended temperature, for chemical resistance, under normal conditions. § Non-pressure, vent-only, applications when chemical is in gas form.

Chemical Resistance

⚠ CAUTION

PVC, ABS and CPVC piping systems have very different chemical resistance. Review manufacturer's literature for all chemicals coming into contact with the piping materials prior to use.

The following table gives the chemical resistance of ABS, PVC and CPVC thermoplastic piping materials and three commonly used seal materials. The information shown is based upon laboratory tests conducted by the manufacturers of the materials, and it is intended to provide a general guideline on the resistance of these materials to various chemicals. **NOTICE:** This table is not a guarantee, and any piping systems using products made of these materials should be tested under actual service conditions to determine their suitability for a particular purpose. See website for most current data: www.charlottepipe.com

Number = Maximum Recommended Temp. (°F)** CF = Consult Factory NR = Not Recommended • • = Incomplete Data

Chemical Name	Pipe & Fitting Materials Recommended Max. Temp (°F)			Seal Materials Recommended Max. Temp. (°F)		
	ABS	PVC	CPVC	Viton ®	EPDM	Neoprene
Black Liquor	73	140	180	200	180	73
Bleach (12.5% Sodium Hypochlorite)	NR	73‡	180‡	200	140	140
Bleach (5.5% Sodium Hypochlorite)	73	140‡	140‡	200	140	140
Borax	140	140	180	185	140	140
Boric Acid	140	140	180	185	140	140
Breeders Pellets, Deriv. Fish	140	140	180	• •	• •	• •
Brine, Acid	73	73	180	200	200	160
Bromic Acid	73	140	180	73	73	• •
Bromine	NR	NR	NR	73	NR	NR
Bromine, Liquid	NR	NR	NR	73	NR	NR
Bromine, Vapor 25%	NR	140	• •	• •	NR	• •
Bromine, Water	NR	73	73	185	NR	NR
Bromine, Water, (Sat'd)	NR	73	73	• •	• •	• •
Bromobenzene	NR	NR	NR	150	NR	NR
Bromotoluene	NR	NR	NR	NR	NR	NR
Butadiene	NR	140	73	185	NR	140
Butane	NR	140	• •	185	NR	73
Butanol, Primary	NR	NR	NR	• •	• •	• •
Butanol, Secondary	NR	NR	NR	• •	• •	• •
Butyl Acetate	NR	NR	NR	NR	140	NR
Butyl Alcohol	73	100	NR	75	200	140
Butyl Carbitol	• •	• •	NR	• •	• •	• •
Butyl Cellosolve (2-butoxyethanol)	NR	73	NR	NR	140	• •
Butynediol	NR	73	• •	• •	• •	• •
Butylene	NR	73	• •	100	NR	NR
Butyl Phenol	NR	73	• •	• •	• •	NR
Butyl Pthalate	NR	NR	NR	73	• •	• •
Butyl Stearate	NR	73	73	200	NR	NR
Butyric Acid	NR	NR	NR	73	140	NR
Cadmium Acetate	• •	• •	180	• •	• •	• •
Cadmium Chloride	• •	• •	180	• •	• •	• •
Cadmium Cyanide	• •	140	180	• •	• •	73
Cadmium Sulfate	• •	• •	180	• •	• •	• •
Caffeine Citrate	• •	73	• •	• •	• •	• •
Calcium Acetate	NR	73	180	• •	R	• •

Acrylonitrile-Butadiene-Styrene Polyvinyl Chloride Type 1 Grade 1 Chlorinated Polyvinyl Chloride Type IV Grade 1
Flourocarbon Elastomer (Viton ® is a registered trademark of the DuPont Co.) Ethylene Propylene Diene Monomer
** Maximum recommended temperature, for chemical resistance, under normal conditions. § Non-pressure, vent-only, applications when chemical is in gas form.
‡ Must use solvent cement specially formulated for hypochlorite or caustic chemical service (IPS Weld-On 724 or equal).

Chemical Resistance

The following table gives the chemical resistance of ABS, PVC and CPVC thermoplastic piping materials and three commonly used seal materials. The information shown is based upon laboratory tests conducted by the manufacturers of the materials, and it is intended to provide a general guideline on the resistance of these materials to various chemicals. **NOTICE:** This table is not a guarantee, and any piping systems using products made of these materials should be tested under actual service conditions to determine their suitability for a particular purpose. See website for most current data: www.charlottepipe.com

Number = Maximum Recommended Temp. (°F)** CF = Consult Factory NR = Not Recommended • • = Incomplete Data

Chemical Name	Pipe & Fitting Materials Recommended Max. Temp (°F)			Seal Materials Recommended Max. Temp. (°F)		
	ABS	PVC	CPVC	Viton ®	EPDM	Neoprene
Calcium Bisulfide	NR	NR	180	185	• •	• •
Calcium Bisulfite	NR	140	180	185	NR	73
Calcium Carbonate	140	140	180	200	200	73
Calcium Chlorate	140	140	180	185	140	73
Calcium Chloride	140	140	180	200	200	160
Calcium Hydroxide	140	140‡	180‡	200	200	70
Calcium Hypochlorite	140	140‡	180‡	185	73	• •
Calcium Nitrate	140	140	180	200	200	100
Calcium Oxide	140	140	180	• •	200	160
Calcium Sulfate	140	140	180	200	200	160
Camphor Crystals	NR	73	• •	200	200	NR
Cane Sugar Liquors	120	140	180	200	200	160
Caprolactam	NR	• •	NR	• •	• •	• •
Caprolactone	NR	• •	NR	• •	• •	• •
Caprylic Acid	NR	• •	NR	• •	• •	• •
Carbitol™	NR	NR	NR	73	140	73
Carbon Bisulfide	NR	NR	NR	• •	• •	• •
Carbon Dioxide, Wet	140	140	180	200	200	160
Carbon Dioxide, Dry	140	140	180	200	200	160
Carbon Disulfide	NR	NR	NR	200	NR	NR
Carbonic Acid	• •	140	180	200	200	73
Carbon Monoxide	140	140	180	200	200	73
Carbon Tetrachloride	NR	NR	NR	185	NR	NR
◊Castor Oil	NR	140	NR	200	NR	200
Caustic Potash	140	140	CF	NR	140	160
Caustic Soda	NR	73‡	CF	NR	70	100
Cellosolve	NR	73	NR	NR	140	• •
Cellosolve Acetate	NR	• •	NR	NR	140	NR
Chloracetic Acid	73	73	180	NR	73	• •
Cloracetyl Chloride	NR	73	• •	• •	• •	• •
Chloral Hydrate	• •	140	180	NR	NR	73
Chloramine	NR	73	• •	NR	NR	NR
Chloric Acid, 20%	• •	140	180	140	• •	140
Chlorinated Solvents, Wet or Dry	NR	NR	NR	200	NR	NR
Chlorinated Water, by Cl_2 Gas, Up to 3500 ppm	140	140	CF	185	100	NR

Acrylonitrile-Butadiene-Styrene Polyvinyl Chloride Type 1 Grade 1 Chlorinated Polyvinyl Chloride Type IV Grade 1
Flourocarbon Elastomer (Viton ® is a registered trademark of the DuPont Co.) Ethylene Propylene Diene Monomer
** Maximum recommended temperature, for chemical resistance, under normal conditions. § Non-pressure, vent-only, applications when chemical is in gas form.
◊Castor oil may cause environmental stress cracking in high-stress areas such as plastic threaded connections.
‡ Must use solvent cement specially formulated for hypochlorite or caustic chemical service (IPS Weld-On 724 or equal).

Chemical Resistance

⚠ CAUTION

PVC, ABS and CPVC piping systems have very different chemical resistance. Review manufacturer's literature for all chemicals coming into contact with the piping materials prior to use.

The following table gives the chemical resistance of ABS, PVC and CPVC thermoplastic piping materials and three commonly used seal materials. The information shown is based upon laboratory tests conducted by the manufacturers of the materials, and it is intended to provide a general guideline on the resistance of these materials to various chemicals. **NOTICE:** This table is not a guarantee, and any piping systems using products made of these materials should be tested under actual service conditions to determine their suitability for a particular purpose. See website for most current data: www.charlottepipe.com

Number = Maximum Recommended Temp. (°F)** CF = Consult Factory NR = Not Recommended • • = Incomplete Data

Chemical Name	Pipe & Fitting Materials Recommended Max. Temp (°F)			Seal Materials Recommended Max. Temp. (°F)		
	ABS	PVC	CPVC	Viton ®	EPDM	Neoprene
Chlorinated Water, by Cl_2 Gas, Above 3500 ppm	NR	NR	185	NR	NR	
Chlorinated Water, by Sodium Hypochlorite	140	140	200	200	200	200
Chlorine Gas, Dry	NR	NR	NR	185	NR	NR
Chlorine Gas, Wet	NR	NR	NR	185	NR	NR
Chlorine, Liquid (See Sodium Hypochlorite)						
Chlorine, trace in air	• •	• •	180§	• •	• •	• •
Chlorine Dioxide (sat'd aqueous sol.)	• •	• •	180	• •	• •	• •
Chlorine Water, (Sat'd)	• •	140	180	200	73	• •
Chlorobenzene	NR	NR	NR	73	NR	NR
Chlorobenzene Chloride	NR	NR	NR	200	• •	• •
Chloroform	NR	NR	NR	73	NR	NR
Chloropicrin	NR	NR	NR	• •	• •	• •
Chlorosulfonic Acid	• •	73	73	NR	NR	NR
Chromic Acid, 10%	73	140‡	180‡	140	70	NR
Chromic Acid, 30%	NR	73‡	180‡	140	NR	NR
Chromic Acid, 40%	NR	73‡	180‡	140	NR	NR
Chromic Acid, 50%	NR	73‡	140‡	140	NR	NR
Chromium Nitrate	• •	• •	180	• •	• •	• •
Chromium Potassium Nitrate	73	73	73	200	140	160
Citric Acid (Sat'd)	140	140	180	200	200	140
Citrus Oils	• •	• •	NR	• •	• •	• •
Coconut Oil	NR	140	NR	185	NR	100
Coke Oven Gas	NR	NR	NR	185	70	• •
Copper Acetate, (Sat'd)	73	73	73	140	100	160
Copper Carbonate	120	140	180	185	200	• •
Copper Chloride	73	140	180	200	200	160
Copper Cyanide	73	140	180	185	200	160
Copper Fluoride	73	140	180	185	200	140
Copper Nitrate	120	140	180	200	200	160
Copper Salts	140	140	180	• •	• •	• •
Copper Sulfate	140	140	180	200	200	160
Corn Oil	73	140	NR	200	NR	NR
Corn Syrup	120	140	180	185	• •	100
Cottonseed Oil	120	140	NR	185	NR	• •
Creosote	NR	NR	NR	73	NR	NR

Acrylonitrile-Butadiene-Styrene Polyvinyl Chloride Type 1 Grade 1 Chlorinated Polyvinyl Chloride Type IV Grade 1
Flourocarbon Elastomer (Viton ® is a registered trademark of the DuPont Co.) Ethylene Propylene Diene Monomer
** Maximum recommended temperature, for chemical resistance, under normal conditions. § Non-pressure, vent-only, applications when chemical is in gas form.
‡ Must use solvent cement specially formulated for hypochlorite or caustic chemical service (IPS Weld-On 724 or equal).

Chemical Resistance

The following table gives the chemical resistance of ABS, PVC and CPVC thermoplastic piping materials and three commonly used seal materials. The information shown is based upon laboratory tests conducted by the manufacturers of the materials, and it is intended to provide a general guideline on the resistance of these materials to various chemicals. **NOTICE:** This table is not a guarantee, and any piping systems using products made of these materials should be tested under actual service conditions to determine their suitability for a particular purpose. See website for most current data: www.charlottepipe.com

Number = Maximum Recommended Temp. (°F)** CF = Consult Factory NR = Not Recommended • • = Incomplete Data

Chemical Name	Pipe & Fitting Materials Recommended Max. Temp (°F)			Seal Materials Recommended Max. Temp. (°F)		
	ABS	PVC	CPVC	Viton ®	EPDM	Neoprene
Cresol	NR	NR	NR	100	NR	NR
Cresylic Acid, 50%	NR	140	NR	185	NR	NR
Crotonaldehyde	NR	NR	NR	NR	NR	73
Crude Oil	NR	73	180	200	NR	NR
Cumene	• •	• •	• •	200	NR	NR
Cupric Fluoride	73	140	180	• •	200	• •
Cupric Sulfate	140	140	180	200	200	160
Cuprous Chloride	73	140	180	200	200	70
Cyclohexane	NR	NR	NR	185	NR	NR
Cyclohexanol	NR	NR	NR	185	NR	NR
Cyclohexanone	NR	NR	NR	NR	73	NR
Decalin	NR	NR	NR	• •	• •	• •
D-Limonene	• •	• •	NR	• •	• •	• •
Desocyephedrine	• •	73	• •	• •	• •	• •
Detergents w/non-ionic surfactants	73	140	NR	200	200	160
Dextrine	• •	140	180	200	NR	• •
Dextrose	120	140	180	200	140	160
Diacetone Alcohol	NR	NR	NR	NR	73	NR
Diazo Salts	• •	140	180	• •	• •	• •
Dibutoxy Ethyl Phthalate	NR	NR	NR	200	73	NR
Dibutyl Ethyl Phthalate	NR	NR	NR	200	73	NR
Dibutyl Phthalate	NR	NR	NR	NR	73	NR
Dibutyl Sebacate	NR	NR	NR	NR	73	NR
Dichlorobenzene	NR	NR	NR	200	NR	NR
Dichloroethylene	NR	NR	NR	200	NR	NR
Diesel Fuels	NR	73	NR	200	NR	NR
Diethylamine	NR	NR	NR	NR	73	• •
Diethyl Cellosolve	NR	• •	NR	200	NR	100
Diethyl Ether	NR	NR	NR	NR	NR	• •
Diglycolic Acid	NR	140	• •	73	73	• •
Dill Oil	• •	• •	NR	• •	• •	• •
Dimethylamine	NR	140	NR	NR	140	NR
Dimethylformamide	NR	NR	NR	NR	NR	NR
Dimethyl Hydrazine	NR	NR	NR	NR	• •	• •
Dioctyl Phthalate (DEHP)	NR	NR	NR	73	73	NR

Acrylonitrile-Butadiene-Styrene Polyvinyl Chloride Type 1 Grade 1 Chlorinated Polyvinyl Chloride Type IV Grade 1
Flourocarbon Elastomer (Viton ® is a registered trademark of the DuPont Co.) Ethylene Propylene Diene Monomer
** Maximum recommended temperature, for chemical resistance, under normal conditions. § Non-pressure, vent-only, applications when chemical is in gas form.

Chemical Resistance

⚠ CAUTION

PVC, ABS and CPVC piping systems have very different chemical resistance. Review manufacturer's literature for all chemicals coming into contact with the piping materials prior to use.

The following table gives the chemical resistance of ABS, PVC and CPVC thermoplastic piping materials and three commonly used seal materials. The information shown is based upon laboratory tests conducted by the manufacturers of the materials, and it is intended to provide a general guideline on the resistance of these materials to various chemicals. **NOTICE:** This table is not a guarantee, and any piping systems using products made of these materials should be tested under actual service conditions to determine their suitability for a particular purpose. See website for most current data: www.charlottepipe.com

Number = Maximum Recommended Temp. (°F)** CF = Consult Factory NR = Not Recommended • • = Incomplete Data

Chemical Name	Pipe & Fitting Materials Recommended Max. Temp (°F)			Seal Materials Recommended Max. Temp. (°F)		
	ABS	PVC	CPVC	Viton ®	EPDM	Neoprene
Dioxane	NR	NR	NR	NR	73	NR
Dioxane, 1.4	NR	NR	NR	NR	73	• •
Disodium Phosphate	120	140	180	• •	200	• •
Distilled Water	140	140	180	200	200	160
Divinylbenzene	NR	NR	NR	200	NR	• •
Dry Cleaning Fluid	NR	NR	NR	200	NR	NR
Dursban TC	NR	• •	NR	• •	• •	• •
EDTA, Tetrasodium, Aqueous Solution	140	140	180	200	200	160
Epsom Salt	120	140	180	• •	200	• •
Epichlorohydrin	NR	NR	NR	• •	• •	• •
Esters	NR	NR	NR	• •	• •	• •
Ethanol, Up to 5%	NR	140	180	• •	200	160
Ethanol, Over 5%	NR	140	NR	• •	200	160
Ethers	NR	NR	NR	NR	• •	NR
Ethyl Acetate	NR	NR	NR	NR	73	NR
Ethyl Acetoacetate	NR	NR	NR	NR	100	• •
Ethyl Acrylate	NR	NR	NR	NR	73	NR
Ethyl Benzene	NR	NR	NR	73	NR	NR
Ethyl Chloride	NR	NR	NR	140	73	73
Ethyl Chloroacetate	NR	NR	NR	• •	• •	• •
Ethylene Bromide	NR	NR	NR	73	NR	NR
Ethylene Chloride	NR	NR	NR	70	• •	• •
Ethylene Chlorohydrin	NR	NR	NR	NR	73	73
Ethylene Diamine	NR	NR	NR	• •	73	100
Ethylene Dichloride	NR	NR	NR	120	NR	NR
Ethyl Ether	NR	NR	NR	NR	NR	NR
Ethylene Glycol, Up to 50%	73	140	180	200	200	160
Ethylene Glycol, Over 50%	73	140	NR	200	200	160
Ethylene Oxide	NR	NR	NR	NR	NR	NR
Fatty Acids	140	140	73	185	NR	140
Ferric Acetate	NR	73	180	• •	• •	• •
Ferric Chloride	120	140	180	200	200	160
Ferric Hydroxide	140	140	180	180	180	100
Ferric Nitrate	140	140	180	200	200	160
Ferric Sulfate	140	140	180	185	200	140

Acrylonitrile-Butadiene-Styrene Polyvinyl Chloride Type 1 Grade 1 Chlorinated Polyvinyl Chloride Type IV Grade 1
Flourocarbon Elastomer (Viton ® is a registered trademark of the DuPont Co.) Ethylene Propylene Diene Monomer
** Maximum recommended temperature, for chemical resistance, under normal conditions. § Non-pressure, vent-only, applications when chemical is in gas form.

Chemical Resistance

The following table gives the chemical resistance of ABS, PVC and CPVC thermoplastic piping materials and three commonly used seal materials. The information shown is based upon laboratory tests conducted by the manufacturers of the materials, and it is intended to provide a general guideline on the resistance of these materials to various chemicals. **NOTICE:** This table is not a guarantee, and any piping systems using products made of these materials should be tested under actual service conditions to determine their suitability for a particular purpose. See website for most current data: www.charlottepipe.com

Number = Maximum Recommended Temp. (°F)** CF = Consult Factory NR = Not Recommended • • = Incomplete Data

Chemical Name	Pipe & Fitting Materials Recommended Max. Temp (°F)			Seal Materials Recommended Max. Temp. (°F)		
	ABS	PVC	CPVC	Viton ®	EPDM	Neoprene
Ferrous Chloride	140	140	180	200	200	• •
Ferrous Hydroxide	140	73	180	180	180	• •
Ferrous Nitrate	140	73	140	200	180	160
Ferrous Sulfate	140	140	180	200	200	160
Fish Solubles	140	140	180	73	NR	• •
Fluorine Gas	NR	NR	NR	NR	NR	NR
Fluoboric Acid	• •	140	73	140	140	160
Fluorosilicic Acid, 30%	73	140	73	200	140	100
Formaldehyde, 35%	NR	140	NR	NR	140	140
Formalin (37% to 50% Formaldehyde)	NR	140	NR	NR	140	140
Formic Acid, Up to 25%	• •	73	180	NR	200	140
Formic Acid, Anhydrous	• •	73	NR	NR	• •	100
Freon F- 11	• •	140§	73§	73	NR	NR
Freon F-12	• •	140§	73§	NR	NR	130
Freon F-21	• •	NR	NR	NR	NR	NR
Freon F-22	• •	NR	NR	NR	NR	130
Freon F-113	• •	140§	• •	130	NR	130
Freon F-114	• •	140§	• •	NR	NR	73
Fructose	120	140	180	200	175	160
Fruit Juices	73	140	180	200	200	200
Furfural	NR	NR	NR	NR	140	73
Gallic Acid	• •	140	73	185	73	73
Gas, Manufactured	NR	73§	NR	• •	• •	• •
Gas, Natural	NR	140§	• •	185	NR	140
Gasoline, Unleaded	NR	NR	NR	200	NR	NR
Gasoline, Sour	NR	NR	NR	73	NR	NR
Gelatin	120	140	150	200	200	160
Gin	NR	140	NR	• •	• •	• •
Glucose	120	140	180	200	200	160
Glycerine	120	140	180	200	200	160
Glycerine, Glycerol	120	140	180	200	200	• •
Glycol, Ethylene, Up to 50%	73	140	180	200	200	200
Glycol, Ethylene, Over 50%	73	140	NR	200	200	200
Glycol, Polyethylene (Carbowax)	• •	140	140	200	180	73
Glycol, Polypropylene	73	NR	NR	200	200	200

Acrylonitrile-Butadiene-Styrene Polyvinyl Chloride Type 1 Grade 1 Chlorinated Polyvinyl Chloride Type IV Grade 1
Flourocarbon Elastomer (Viton ® is a registered trademark of the DuPont Co.) Ethylene Propylene Diene Monomer
** Maximum recommended temperature, for chemical resistance, under normal conditions. § Non-pressure, vent-only, applications when chemical is in gas form.

Chemical Resistance

⚠ CAUTION

PVC, ABS and CPVC piping systems have very different chemical resistance. Review manufacturer's literature for all chemicals coming into contact with the piping materials prior to use.

The following table gives the chemical resistance of ABS, PVC and CPVC thermoplastic piping materials and three commonly used seal materials. The information shown is based upon laboratory tests conducted by the manufacturers of the materials, and it is intended to provide a general guideline on the resistance of these materials to various chemicals. **NOTICE:** This table is not a guarantee, and any piping systems using products made of these materials should be tested under actual service conditions to determine their suitability for a particular purpose. See website for most current data: www.charlottepipe.com

Number = Maximum Recommended Temp. (°F)** CF = Consult Factory NR = Not Recommended • • = Incomplete Data

Chemical Name	Pipe & Fitting Materials Recommended Max. Temp (°F)			Seal Materials Recommended Max. Temp. (°F)		
	ABS	PVC	CPVC	Viton ®	EPDM	Neoprene
Glycol, Propylene, Up to 25%	73	140	180	200	200	73
Glycol, Propylene, Up to 50%	73	140	NR	200	200	73
Glycolic Acid	• •	140	NR	NR	• •	73
Glycol Ethers	NR	140	NR	• •	• •	• •
Grape Sugar, Juice	73	140	180	185	200	160
Green Liquor	140	140	180	• •	150	70
Halocarbons Oils	NR	NR	NR	200	NR	NR
Heptane	73	140	NR	185	NR	73
Hexane	NR	73	73	73	NR	73
Hexanol	NR	100	NR	160	NR	73
Hydraulic Oil	NR	73	• •	200	NR	73
Hydrazine	NR	NR	NR	NR	70	• •
Hydrobromic Acid, Dilute	73	140	180	185	200	73
Hydrobromic Acid, 20%	73	140	73	185	140	73
Hydrobromic Acid, 50%	NR	140	73	185	140	73
Hydrochloric Acid, Dilute	73	140	180	200	140	73
Hydrochloric Acid, 20%	NR	140‡	180‡	200	140	73
Hydrochloric Acid Conc., 37%	NR	140‡	180‡	160	100	73
Hydrocyanic Acid, 10%	140	140	• •	185	200	• •
Hydrofluoric Acid, <10%	NR	140	140	150	73	100
Hydrofluoric Acid, 30%	NR	73	140	200	NR	NR
Hydrofluoric Acid, 40%	NR	73	NR	100	NR	NR
Hydrofluoric Acid, 50%	NR	NR	NR	73	NR	NR
Hydrofluoric Acid, 100%	NR	NR	NR	NR	NR	NR
Hydrofluosilicic Acid, 50%	NR	140	140	200	140	• •
Hydrogen	140§	140§	73§	200	200	160
Hydrogen Cyanide	• •	140	• •	• •	• •	73
Hydrogen Fluoride	NR	NR	NR	NR	73	NR
Hydrogen Peroxide, Dilute	73	140	73	200	73	NR
Hydrogen Peroxide, 36%	NR	140	73	200	NR	NR
Hydrogen Peroxide, 50%	NR	140	73	200	NR	NR
Hydrogen Peroxide, 90%	NR	NR	NR	200	NR	NR
Hydrogen Phosphide	• •	140	• •	• •	73	• •
Hydrogen Sulfide, Dry	• •	140	180	140	100	NR
Hydrogen Sulfide, Aqeous Sol.	• •	140	180	140	100	NR

Acrylonitrile-Butadiene-Styrene Polyvinyl Chloride Type 1 Grade 1 Chlorinated Polyvinyl Chloride Type IV Grade 1
Flourocarbon Elastomer (Viton ® is a registered trademark of the DuPont Co.) Ethylene Propylene Diene Monomer
** Maximum recommended temperature, for chemical resistance, under normal conditions. § Non-pressure, vent-only, applications when chemical is in gas form.
‡ Must use solvent cement specially formulated for hypochlorite or caustic chemical service (IPS Weld-On 724 or equal).

Chemical Resistance

The following table gives the chemical resistance of ABS, PVC and CPVC thermoplastic piping materials and three commonly used seal materials. The information shown is based upon laboratory tests conducted by the manufacturers of the materials, and it is intended to provide a general guideline on the resistance of these materials to various chemicals. **NOTICE:** This table is not a guarantee, and any piping systems using products made of these materials should be tested under actual service conditions to determine their suitability for a particular purpose. See website for most current data: www.charlottepipe.com

Number = Maximum Recommended Temp. (°F)** CF = Consult Factory NR = Not Recommended • • = Incomplete Data

Chemical Name	Pipe & Fitting Materials Recommended Max. Temp (°F)			Seal Materials Recommended Max. Temp. (°F)		
	ABS	PVC	CPVC	Viton ®	EPDM	Neoprene
Hydroquinone	• •	140	• •	185	NR	NR
Hydroxylamine Sulfate	• •	140	• •	• •	73	73
Hypochlorous Acid	73	140	CF	73	73	• •
Iodine	NR	NR	NR	73	73	NR
Iodine Solution, 10%	NR	NR	NR	200	150	• •
Iodine in Alcohol	NR	NR	NR	• •	• •	• •
Iron Salts	• •	• •	180	• •	• •	• •
Isopropanol	NR	140	NR	• •	• •	• •
Isopropyl Alcohol	NR	140	140	160	160	73
Isopropyl Ether	NR	NR	NR	NR	NR	NR
Isooctane	NR	NR	NR	185	NR	73
Jet Fuel	NR	NR	NR	200	NR	NR
Kerosene	NR	NR	NR	200	NR	73
Ketones	NR	NR	NR	NR	NR	NR
Kraft Liquor	73	140	180	100	• •	73
Lactic Acid, 25%	NR	140	100	200	140	73
Lactic Acid, 80%	NR	100	73	200	140	73
Lard Oil	73	140	NR	185	NR	73
Lauric Acid	• •	140	• •	100	• •	• •
Lauryl Chloride	• •	140	• •	200	140	• •
Lead Acetate	• •	140	180	NR	200	160
Lead Chloride	• •	140	180	140	NR	73
Lead Nitrate	• •	140	180	200	175	140
Lead Sulfate	• •	140	180	200	200	140
Lemon Oil	• •	140	NR	200	NR	73
Ligroine	NR	NR	NR	100	• •	73
Lime Sulfur	• •	140	180	185	200	100
Limonene	• •	• •	NR	• •	• •	• •
Linoleic Acid	• •	140	180	140	73	• •
Linoleic Oil	• •	140	180	73	• •	• •
Linseed Oil	73	140	NR	200	73	73
Linseed Oil, Blue	73	73	NR	200	• •	• •
Liqueurs	NR	140	NR	• •	200	160
Lithium Bromide (Brine)	• •	140	180	200	• •	• •
Lithium Chloride	• •	140	180	140	100	• •

Acrylonitrile-Butadiene-Styrene Polyvinyl Chloride Type 1 Grade 1 Chlorinated Polyvinyl Chloride Type IV Grade 1
Flourocarbon Elastomer (Viton ® is a registered trademark of the DuPont Co.) Ethylene Propylene Diene Monomer
** Maximum recommended temperature, for chemical resistance, under normal conditions. § Non-pressure, vent-only, applications when chemical is in gas form.

Chemical Resistance

⚠ CAUTION

PVC, ABS and CPVC piping systems have very different chemical resistance. Review manufacturer's literature for all chemicals coming into contact with the piping materials prior to use.

The following table gives the chemical resistance of ABS, PVC and CPVC thermoplastic piping materials and three commonly used seal materials. The information shown is based upon laboratory tests conducted by the manufacturers of the materials, and it is intended to provide a general guideline on the resistance of these materials to various chemicals. **NOTICE:** This table is not a guarantee, and any piping systems using products made of these materials should be tested under actual service conditions to determine their suitability for a particular purpose. See website for most current data: www.charlottepipe.com

Number = Maximum Recommended Temp. (°F)** CF = Consult Factory NR = Not Recommended • • = Incomplete Data

Chemical Name	Pipe & Fitting Materials Recommended Max. Temp (°F)			Seal Materials Recommended Max. Temp. (°F)		
	ABS	PVC	CPVC	Viton ®	EPDM	Neoprene
Lithium Sulfate	• •	140	180	• •	• •	• •
Lubricating Oil,Petroleum Based	NR	140	180	160	NR	NR
Lux Liquid	• •	NR	• •	• •	• •	• •
Lye Solutions	• •	140	180	• •	• •	• •
Machine Oil	NR	140	180	140	NR	NR
Magnesium Carbonate	120	140	180	200	170	140
Magnesium Chloride	120	140	180	170	170	160
Magnesium Citrate	120	140	180	200	175	• •
Magnesium Fluoride	120	• •	180	200	140	• •
Magnesium Hydroxide	120	140	180	200	200	• •
Magnesium Nitrate	120	140	180	• •	200	• •
Magnesium Oxide	120	• •	180	• •	140	160
Magnesium Salts, Inorganic	120	• •	180	200	160	160
Magnesium Sulfate	120	140	180	200	180	180
Maleic Acid	140	140	180	200	NR	73
Maleic Acid (Sat'd)	140	140	180	200	73	NR
Malic Acid	140	140	180	• •	• •	• •
Manganese Sulfate	120	140	180	200	175	160
Mercuric Acid	• •	• •	180	• •	• •	• •
Mercuric Chloride	• •	140	140	185	200	140
Mercuric Cyanide	• •	140	180	73	73	73
Mercuric Sulfate	• •	140	180	73	73	• •
Mercurous Nitrate	• •	140	180	73	73	NR
Mercury	• •	140	180	185	200	140
Methane	140§	140§	180§	185	NR	73
Methanol	NR	140	140	NR	160	160
Methoxyethyl Oleate	NR	73	• •	• •	• •	• •
Methyl Amine	NR	NR	NR	100	73	73
Methyl Bromide	NR	NR	NR	185	NR	NR
Methyl Cellosolve	NR	NR	NR	NR	NR	NR
Methyl Chloride	NR	NR	NR	73	NR	NR
Methyl Chloroform	NR	NR	NR	73	NR	NR
Methyl Ethyl Ketone	NR	NR	NR	NR	NR	NR
Methyl Formate	NR	• •	NR	NR	100	73
Methyl Isobutyl Ketone	NR	NR	NR	NR	NR	NR

Acrylonitrile-Butadiene-Styrene Polyvinyl Chloride Type 1 Grade 1 Chlorinated Polyvinyl Chloride Type IV Grade 1
Flourocarbon Elastomer (Viton ® is a registered trademark of the DuPont Co.) Ethylene Propylene Diene Monomer
** Maximum recommended temperature, for chemical resistance, under normal conditions. § Non-pressure, vent-only, applications when chemical is in gas form.

Chemical Resistance

The following table gives the chemical resistance of ABS, PVC and CPVC thermoplastic piping materials and three commonly used seal materials. The information shown is based upon laboratory tests conducted by the manufacturers of the materials, and it is intended to provide a general guideline on the resistance of these materials to various chemicals. **NOTICE:** This table is not a guarantee, and any piping systems using products made of these materials should be tested under actual service conditions to determine their suitability for a particular purpose. See website for most current data: www.charlottepipe.com

Number = Maximum Recommended Temp. (°F)** CF = Consult Factory NR = Not Recommended • • = Incomplete Data

Chemical Name	Pipe & Fitting Materials Recommended Max. Temp (°F)			Seal Materials Recommended Max. Temp. (°F)		
	ABS	PVC	CPVC	Viton ®	EPDM	Neoprene
Methyl Methacrylate	NR	NR	NR	NR	NR	NR
Methyl Sulfate	NR	73	73	• •	• •	• •
Methyl Sulfuric Acid	• •	140	73	NR	73	73
Methylene Bromide	NR	NR	NR	73	NR	NR
Methylene Chloride	NR	NR	NR	73	NR	NR
Methylene Chlorobromide	NR	NR	NR	NR	NR	NR
Methylene Iodine	NR	NR	NR	• •	200	• •
Methylisobutyl Carbinol	NR	NR	NR	73	73	73
Milk	140	140	73	200	200	200
Mineral Oil	73	140	180	200	NR	73
Molasses	120	140	180	185	100	150
Monochloroacetic Acid, 50%	73	140	73	70	NR	NR
Monoethanolamine	NR	NR	NR	185	70	NR
Motor Oil	73	140	180	200	NR	NR
Muriatic Acid, Up to 37% HCl	NR	140	180	160	100	73
Naphtha	NR	NR	NR	150	NR	NR
Naphthalene	NR	NR	NR	180	NR	NR
n-Heptane	NR	NR	NR	200	NR	73
Natural Gas	NR	140§	• •	185	NR	140
Nickel Acetate	73	73	180	NR	73	• •
Nickel Chloride	73	140	180	200	200	160
Nickel Nitrate	73	140	180	200	180	• •
Nickel Sulfate	73	140	180	200	200	160
Nicotine	NR	140	• •	• •	• •	NR
Nicotinic Acid	NR	140	180	• •	73	140
Nitric Acid, 10%	NR	140‡	140‡	NR	73	73
Nitric Acid, 30%	NR	140‡	140‡	NR	NR	NR
Nitric Acid, 40%	NR	140‡	140‡	NR	NR	NR
Nitric Acid, 50%	NR	73‡	100‡	NR	NR	NR
Nitric Acid, 70%	NR	NR	73‡	NR	NR	NR
Nitric Acid, 100%	NR	NR	NR	NR	NR	NR
Nitric Acid, Fuming	NR	NR	NR	NR	NR	NR
Nitrobenzene	NR	NR	NR	73	NR	• •
Nitroglycerine	NR	NR	NR	• •	• •	• •
Nitrous Acid, 10%	NR	73	• •	100	• •	• •

Acrylonitrile-Butadiene-Styrene Polyvinyl Chloride Type 1 Grade 1 Chlorinated Polyvinyl Chloride Type IV Grade 1
Flourocarbon Elastomer (Viton ® is a registered trademark of the DuPont Co.) Ethylene Propylene Diene Monomer
** Maximum recommended temperature, for chemical resistance, under normal conditions. § Non-pressure, vent-only, applications when chemical is in gas form.
‡ Must use solvent cement specially formulated for hypochlorite or caustic chemical service (IPS Weld-On 724 or equal).

Chemical Resistance

⚠ CAUTION

PVC, ABS and CPVC piping systems have very different chemical resistance. Review manufacturer's literature for all chemicals coming into contact with the piping materials prior to use.

The following table gives the chemical resistance of ABS, PVC and CPVC thermoplastic piping materials and three commonly used seal materials. The information shown is based upon laboratory tests conducted by the manufacturers of the materials, and it is intended to provide a general guideline on the resistance of these materials to various chemicals. **NOTICE:** This table is not a guarantee, and any piping systems using products made of these materials should be tested under actual service conditions to determine their suitability for a particular purpose. See website for most current data: www.charlottepipe.com

Number = Maximum Recommended Temp. (°F)** CF = Consult Factory NR = Not Recommended • • = Incomplete Data

Chemical Name	Pipe & Fitting Materials Recommended Max. Temp (°F)			Seal Materials Recommended Max. Temp. (°F)		
	ABS	PVC	CPVC	Viton ®	EPDM	Neoprene
Nitrous Oxide	73§	73§	• •	73	• •	NR
Nitroglycol	NR	NR	• •	• •	• •	73
Nonionic Surfactants	140	140	NR	200	200	160
1-Octanol	NR	• •	NR	• •	• •	• •
Ocenol	NR	• •	• •	• •	• •	• •
Oils, Vegetable	NR	140	NR	200	NR	• •
Oleic Acid	140	140	180	185	73	73
Oleum	NR	NR	NR	NR	NR	NR
Olive Oil	73	140	NR	150	NR	NR
Oxalic Acid (Sat'd)	• •	140	140	100	150	100
Oxalic Acid, 20%	73	140	180	100	150	100
Oxalic Acid, 50%	• •	140	73	100	150	100
Oxygen	140§	140§	180§	185	200	140
Ozonated Water	• •	73	73	NR	73	73
Ozone	140§	140§	180§	185	200	NR
Palm Oil	• •	• •	• •	73	NR	• •
Palmitic Acid, 10%	73	140	73	185	73	NR
Palmitic Acid, 70%	NR	NR	73	185	• •	NR
Paraffin	73	140	• •	200	NR	140
Peanut Oil	• •	• •	• •	150	NR	• •
Pentachlorophenol	NR	NR	NR	200	NR	NR
Peppermint Oil	NR	73	73	73	73	73
Peracetic Acid, 40%	NR	NR	NR	• •	• •	• •
Perchloric Acid, 10%	NR	73	180	200	73	140
Perchloric Acid, 70%	NR	NR	180	200	73	73
Perchloroethylene	NR	NR	NR	200	NR	NR
Perphosphate	• •	140	170	73	73	• •
Petrolatum	• •	140	180	• •	• •	• •
Petroleum Oils, Sour	• •	73	180	200	NR	• •
Petroleum Oils, Refined	73	140	180	200	NR	• •
Phenol	NR	NR	NR	200	73	NR
Phenylhydrazine	NR	NR	NR	NR	NR	• •
Phenylhydrazine Hydrochloride	NR	NR	NR	• •	• •	• •
Phosgene, Liquid	NR	NR	NR	NR	73	• •
Phosgene, Gas	NR	NR	NR	NR	73	• •

Acrylonitrile-Butadiene-Styrene Polyvinyl Chloride Type 1 Grade 1 Chlorinated Polyvinyl Chloride Type IV Grade 1
Flourocarbon Elastomer (Viton ® is a registered trademark of the DuPont Co.) Ethylene Propylene Diene Monomer
** Maximum recommended temperature, for chemical resistance, under normal conditions. § Non-pressure, vent-only, applications when chemical is in gas form.

Chemical Resistance

The following table gives the chemical resistance of ABS, PVC and CPVC thermoplastic piping materials and three commonly used seal materials. The information shown is based upon laboratory tests conducted by the manufacturers of the materials, and it is intended to provide a general guideline on the resistance of these materials to various chemicals. **NOTICE:** This table is not a guarantee, and any piping systems using products made of these materials should be tested under actual service conditions to determine their suitability for a particular purpose. See website for most current data: www.charlottepipe.com

Number = Maximum Recommended Temp. (°F)** CF = Consult Factory NR = Not Recommended • • = Incomplete Data

Chemical Name	Pipe & Fitting Materials Recommended Max. Temp (°F)			Seal Materials Recommended Max. Temp. (°F)		
	ABS	PVC	CPVC	Viton ®	EPDM	Neoprene
Phosphoric Acid, 10%	73	140‡	180‡	200	140	140
Phosphoric Acid, 50%	NR	140‡	180‡	160	160	160
Phosphoric Acid, 85%	NR	140‡	180‡	160	160	160
Phosphoric Anhydride	• •	73	73	• •	• •	• •
Phosphorous Pentoxide	• •	73	180	200	200	• •
Phosphorous, Red	NR	70	• •	• •	• •	• •
Phosphorus Trichloride	NR	NR	NR	• •	• •	NR
Phosphorous, Yellow	NR	73	• •	• •	• •	• •
Photographic Solutions	• •	140	180	185	• •	100
Phthalic Acid, 10%	73	73	• •	140	• •	NR
Picric Acid	NR	NR	NR	140	140	70
Pine Oil	NR	NR	NR	73	NR	NR
Plating Solutions, Brass	• •	140	180	140	73	140
Plating Solutions, Cadmium	• •	140	180	180	180	140
Plating Solutions, Chrome	• •	140	180	180	180	NR
Plating Solutions, Copper	• •	140	180	180	180	140
Plating Solutions, Gold	• •	140	180	180	73	73
Plating Solutions, Indium	• •	• •	• •	140	73	140
Plating Solutions, Lead	• •	140	180	180	180	140
Plating Solutions, Nickel	• •	140	180	180	180	140
Plating Solutions, Rhodium	• •	140	180	73	120	73
Plating Solutions, Silver	• •	140	180	140	120	140
Plating Solutions, Tin	• •	140	180	140	180	140
Plating Solutions, Zinc	• •	140	180	140	73	180
POE Oils (Polyolester)	NR	NR	NR	NR	NR	NR
Polyethylene Glycol (Carbowax)	• •	140	140	200	180	73
Polypropylene Glycol	73	NR	NR	200	200	200
Potash	140	140	180	200	170	160
Potassium Acetate	• •	• •	180	• •	• •	• •
Potassium Alum	• •	140	180	200	200	160
Potassium Aluminum Sulfate	• •	140	180	200	200	160
Potassium Amyl Xanthate	• •	73	• •	• •	• •	• •
Potassium Bicarbonate	140	140	180	200	170	160
Potassium Bichromate	140	140	180	200	170	• •
Potassium Bisulfate, Sat'd	• •	140	180	200	180	73

Acrylonitrile-Butadiene-Styrene Polyvinyl Chloride Type 1 Grade 1 Chlorinated Polyvinyl Chloride Type IV Grade 1
Flourocarbon Elastomer (Viton ® is a registered trademark of the DuPont Co.) Ethylene Propylene Diene Monomer
** Maximum recommended temperature, for chemical resistance, under normal conditions. § Non-pressure, vent-only, applications when chemical is in gas form.
‡ Must use solvent cement specially formulated for hypochlorite or caustic chemical service (IPS Weld-On 724 or equal).

Chemical Resistance

⚠ CAUTION

PVC, ABS and CPVC piping systems have very different chemical resistance. Review manufacturer's literature for all chemicals coming into contact with the piping materials prior to use.

The following table gives the chemical resistance of ABS, PVC and CPVC thermoplastic piping materials and three commonly used seal materials. The information shown is based upon laboratory tests conducted by the manufacturers of the materials, and it is intended to provide a general guideline on the resistance of these materials to various chemicals. **NOTICE:** This table is not a guarantee, and any piping systems using products made of these materials should be tested under actual service conditions to determine their suitability for a particular purpose. See website for most current data: www.charlottepipe.com

Number = Maximum Recommended Temp. (°F)** CF = Consult Factory NR = Not Recommended • • = Incomplete Data

Chemical Name	Pipe & Fitting Materials Recommended Max. Temp (°F)			Seal Materials Recommended Max. Temp. (°F)		
	ABS	PVC	CPVC	Viton ®	EPDM	Neoprene
Potassium Borate	140	140	180	200	200	• •
Potassium Bromate	140	140	180	200	• •	140
Potassium Bromide	140	140	180	200	170	160
Potassium Carbonate	140	140	180	200	170	160
Potassium Chlorate	140	140	180	140	140	100
Potassium Chloride	140	140	180	200	200	160
Potassium Chromate	140	140	180	200	170	70
Potassium Cyanide	140	140	180	185	140	160
Potassium Dichromate	140	140	180	200	170	• •
Potassium Ethyl Xanthate	• •	73	• •	• •	• •	• •
Potassium Ferricyanide	140	140	180	140	140	150
Potassium Ferrocyanide	140	140	180	140	140	150
Potassium Fluoride	140	140	180	200	140	• •
Potassium Hydroxide, 25%	73	140‡	180‡	NR	180	140
Potassium Hydroxide, 50%	73	140‡	180‡	NR	180	NR
Potassium Hypochlorite	• •	73‡	180‡	73	NR	• •
Potassium Iodide	• •	73	180	180	140	160
Potassium Nitrate	140	140	180	200	200	140
Potassium Perborate	140	140	180	73	73	73
Potassium Perchlorate, (Sat'd)	140	140	180	150	140	• •
Potassium Permanganate, 10%	140	140	180	140	200	100
Potassium Permanganate, 25%	140	140	180	140	140	100
Potassium Persulphate, (Sat'd)	73	140	180	200	200	140
Potassium Phosphate	73	• •	180	180	180	180
Potassium Sulfate	73	140	180	200	200	140
Potassium Sulfite	73	140	180	200	200	140
Potassium Tripolyphosphate	• •	• •	180	100	• •	73
Propane	140§	140§	73§	73	NR	73
Propanol	NR	140	NR	200	200	140
Propargyl Alcohol	NR	140	NR	140	140	NR
Propionic Acid, Up to 2%	NR	• •	180	• •	• •	NR
Propionic Acid, Over 2%	NR	• •	NR	• •	• •	NR
Propyl Alcohol	NR	140	NR	200	200	140
Propylene Dichloride	NR	NR	NR	73	NR	NR
Propylene Glycol, Up to 25%	73	140	180	200	200	73

Acrylonitrile-Butadiene-Styrene Polyvinyl Chloride Type 1 Grade 1 Chlorinated Polyvinyl Chloride Type IV Grade 1
Flourocarbon Elastomer (Viton ® is a registered trademark of the DuPont Co.) Ethylene Propylene Diene Monomer
** Maximum recommended temperature, for chemical resistance, under normal conditions. § Non-pressure, vent-only, applications when chemical is in gas form.
‡ Must use solvent cement specially formulated for hypochlorite or caustic chemical service (IPS Weld-On 724 or equal).

Chemical Resistance

The following table gives the chemical resistance of ABS, PVC and CPVC thermoplastic piping materials and three commonly used seal materials. The information shown is based upon laboratory tests conducted by the manufacturers of the materials, and it is intended to provide a general guideline on the resistance of these materials to various chemicals. **NOTICE:** This table is not a guarantee, and any piping systems using products made of these materials should be tested under actual service conditions to determine their suitability for a particular purpose. See website for most current data: www.charlottepipe.com

Number = Maximum Recommended Temp. (°F)** CF = Consult Factory NR = Not Recommended • • = Incomplete Data

Chemical Name	Pipe & Fitting Materials Recommended Max. Temp (°F)			Seal Materials Recommended Max. Temp. (°F)		
	ABS	PVC	CPVC	Viton ®	EPDM	Neoprene
Propylene Glycol, Up to 50%	73	140	NR	200	200	73
Propylene Oxide	NR	NR	NR	NR	73	NR
Pyridine	NR	NR	NR	NR	73	NR
Pyrogallicia Acid	• •	73	• •	• •	• •	73
Quaternary Ammonium Salts	NR	140	NR	73	• •	73
Radon Gas	140§	140§	140§	200	200	200
Rayon Coagulating Bath	• •	140	NR	• •	• •	• •
Reverse Osmosis Water	140	140	180	200	200	200
Salicyclic Acid	• •	140	180	185	200	NR
Sea Water	140	140	180	200	200	200
Selenic Acid	• •	140	• •	NR	73	73
Silicic Acid	• •	140	• •	200	140	140
Silicone Oil	• •	100	180	200	140	200
Silver Chloride	140	• •	180	73	73	73
Silver Cyanide	140	140	180	140	140	73
Silver Nitrate	140	140	180	200	200	160
Silver Sulfate	140	140	180	200	170	73
Soaps	140	140	180	200	200	140
Sodium Acetate	120	140	180	NR	170	NR
Sodium Aluminate	120	• •	180	200	200	140
Sodium Alum	120	140	180	200	170	140
Sodium Arsenate	120	140	180	200	140	73
Sodium Benzoate	120	140	180	200	200	NR
Sodium Bicarbonate	120	140	180	200	200	160
Sodium Bichromate	120	140	180	200	140	73
Sodium Bisulfate	120	140	180	200	200	140
Sodium Bisulfite	120	140	180	200	200	140
Sodium Borate	120	73	180	140	140	100
Sodium Bromide	120	140	180	200	200	73
Sodium Carbonate	120	140	180	200	140	140
Sodium Chlorate	120	73	180	100	140	140
Sodium Chloride	120	140	180	200	140	160
Sodium Chlorite	120	NR	180	NR	NR	• •
Sodium Chromate	120	140	180	140	140	73
Sodium Cyanide	120	73	180	140	140	140

Acrylonitrile-Butadiene-Styrene Polyvinyl Chloride Type 1 Grade 1 Chlorinated Polyvinyl Chloride Type IV Grade 1
Flourocarbon Elastomer (Viton ® is a registered trademark of the DuPont Co.) Ethylene Propylene Diene Monomer
** Maximum recommended temperature, for chemical resistance, under normal conditions. § Non-pressure, vent-only, applications when chemical is in gas form.

Chemical Resistance

⚠ CAUTION

PVC, ABS and CPVC piping systems have very different chemical resistance. Review manufacturer's literature for all chemicals coming into contact with the piping materials prior to use.

The following table gives the chemical resistance of ABS, PVC and CPVC thermoplastic piping materials and three commonly used seal materials. The information shown is based upon laboratory tests conducted by the manufacturers of the materials, and it is intended to provide a general guideline on the resistance of these materials to various chemicals. **NOTICE:** This table is not a guarantee, and any piping systems using products made of these materials should be tested under actual service conditions to determine their suitability for a particular purpose. See website for most current data: www.charlottepipe.com

Number = Maximum Recommended Temp. (°F)** CF = Consult Factory NR = Not Recommended • • = Incomplete Data

Chemical Name	Pipe & Fitting Materials Recommended Max. Temp (°F)			Seal Materials Recommended Max. Temp. (°F)		
	ABS	PVC	CPVC	Viton ®	EPDM	Neoprene
Sodium Dichromate	120	140	180	200	140	NR
Sodium Ferricyanide	120	140	180	140	140	• •
Sodium Ferrocyanide	120	140	180	140	140	• •
Sodium Fluoride	120	73	140	140	140	73
Sodium Formate	• •	• •	180	• •	• •	• •
Sodium Hydroxide, 15%	120	140‡	CF	NR	180	160
Sodium Hydroxide, 30%	73	73‡	CF	NR	140	160
Sodium Hydroxide, 50%	73	73‡	CF	NR	140	160
Sodium Hydroxide, 70%	NR	73‡	CF	NR	140	160
Sodium Hypobromite	• •	• •	180	• •	• •	• •
Sodium Hypochlorite, Sat'd, 12.5%	NR	73‡	180‡	140	NR	NR
Sodium Iodide	• •	• •	180	140	140	140
Sodium Metaphosphate	120	73	180	73	73	• •
Sodium Nitrate	120	140	180	200	200	140
Sodium Nitrite	120	140	180	200	170	140
Sodium Palmitate	• •	140	180	• •	• •	• •
Sodium Perborate	120	140	180	73	73	73
Sodium Perchlorate	120	140	180	• •	• •	• •
Sodium Peroxide	NR	140	180	185	140	73
Sodium Phosphate, Alkaline	73	140	180	200	170	140
Sodium Phosphate, Acid	73	140	180	200	170	140
Sodium Phosphate, Neutral	73	140	180	200	170	140
Sodium Silicate	• •	• •	180	200	200	140
Sodium Sulfate	73	140	180	200	140	140
Sodium Sulfide	73	140	180	200	140	140
Sodium Sulfite	73	140	180	200	140	140
Sodium Thiosulfate	73	140	180	200	200	160
Sodium Tripolyphosphate	• •	• •	180	• •	• •	• •
Solicylaldehyde	NR	NR	• •	• •	• •	• •
Sour Crude Oil	NR	73	180	200	NR	NR
Soybean Oil	NR	140	180	200	NR	73
Soybean Oil, Epoxidized	NR	NR	NR	200	NR	NR
Stannic Chloride	120	140	180	200	100	NR
Stannous Chloride	120	140	180	200	73	160
Stannous Sulfate	• •	• •	180	• •	• •	• •

Acrylonitrile-Butadiene-Styrene Polyvinyl Chloride Type 1 Grade 1 Chlorinated Polyvinyl Chloride Type IV Grade 1
Flourocarbon Elastomer (Viton ® is a registered trademark of the DuPont Co.) Ethylene Propylene Diene Monomer
** Maximum recommended temperature, for chemical resistance, under normal conditions. § Non-pressure, vent-only, applications when chemical is in gas form.
‡ Must use solvent cement specially formulated for hypochlorite or caustic chemical service (IPS Weld-On 724 or equal).

Chemical Resistance

The following table gives the chemical resistance of ABS, PVC and CPVC thermoplastic piping materials and three commonly used seal materials. The information shown is based upon laboratory tests conducted by the manufacturers of the materials, and it is intended to provide a general guideline on the resistance of these materials to various chemicals. **NOTICE:** This table is not a guarantee, and any piping systems using products made of these materials should be tested under actual service conditions to determine their suitability for a particular purpose. See website for most current data: www.charlottepipe.com

Number = Maximum Recommended Temp. (°F)** CF = Consult Factory NR = Not Recommended • • = Incomplete Data

Chemical Name	Pipe & Fitting Materials Recommended Max. Temp (°F)			Seal Materials Recommended Max. Temp. (°F)		
	ABS	PVC	CPVC	Viton ®	EPDM	Neoprene
Starch	140	140	180	200	170	160
Stearic Acid	• •	140	73	100	NR	73
Stoddard's Solvent	NR	NR	NR	185	NR	NR
Strontium Chloride	• •	• •	180	• •	• •	• •
Styrene Monomer	NR	NR	NR	NR	NR	NR
Succinic Acid	• •	140	• •	73	73	• •
Sugar Syrup	73	140	180	180	180	• •
Sulfamic Acid	NR	NR	180	NR	NR	73
Sulfate Liquors	• •	• •	• •	73	73	• •
Sulfite Liquor	• •	• •	180	140	140	73
Sulfur	• •	140	73	200	• •	73
Sulfur Chloride	NR	NR	180	140	NR	NR
Sulfur Dioxide, Dry	73§	140§	NR	100	73	NR
Sulfur Dioxide, Wet	73§	73§	NR	140	140	• •
Sulfur Trioxide	• •	140	180	140	73	NR
Sulfur Trioxide, Gas	140§	140§	• •	140	73	NR
Sulfuric Acid, 10%	120	140‡	180‡	200	140	160
Sulfuric Acid, 20%	120	140‡	180‡	200	140	160
Sulfuric Acid, 30%	NR	140‡	180‡	200	200	160
Sulfuric Acid, 50%	NR	140‡	180‡	200	200	160
Sulfuric Acid, 60%	NR	140‡	180‡	200	200	73
Sulfuric Acid, 70%	NR	140‡	180‡	200	NR	NR
Sulfuric Acid, 80%	NR	73‡	180‡	180	NR	NR
Sulfuric Acid, 90%	NR	NR	140‡	160	NR	NR
Sulfuric Acid, 93%	NR	NR	73‡	160	NR	NR
Sulfuric Acid, 98%	NR	NR	73‡	160	NR	NR
Sulfuric Acid, 100%	NR	NR	NR	160	NR	NR
Sulfurous Acid	NR	140	180	NR	NR	NR
Surfactants, Nonionic	140	140	NR	200	200	160
Tall Oil	• •	140	180	73	NR	73
Tannic Acid, 10%	NR	140	180	100	73	100
Tannic Acid, 30%	NR	• •	73	• •	• •	• •
Tanning Liquors	140	140	180	200	• •	73
Tar	NR	NR	NR	185	NR	73
Tartaric Acid	140	140	73	73	NR	73

Acrylonitrile-Butadiene-Styrene Polyvinyl Chloride Type 1 Grade 1 Chlorinated Polyvinyl Chloride Type IV Grade 1
Flourocarbon Elastomer (Viton ® is a registered trademark of the DuPont Co.) Ethylene Propylene Diene Monomer
** Maximum recommended temperature, for chemical resistance, under normal conditions. § Non-pressure, vent-only, applications when chemical is in gas form.
‡ Must use solvent cement specially formulated for hypochlorite or caustic chemical service (IPS Weld-On 724 or equal).

Chemical Resistance

⚠ CAUTION

PVC, ABS and CPVC piping systems have very different chemical resistance. Review manufacturer's literature for all chemicals coming into contact with the piping materials prior to use.

The following table gives the chemical resistance of ABS, PVC and CPVC thermoplastic piping materials and three commonly used seal materials. The information shown is based upon laboratory tests conducted by the manufacturers of the materials, and it is intended to provide a general guideline on the resistance of these materials to various chemicals. **NOTICE:** This table is not a guarantee, and any piping systems using products made of these materials should be tested under actual service conditions to determine their suitability for a particular purpose. See website for most current data: www.charlottepipe.com

Number = Maximum Recommended Temp. (°F)** CF = Consult Factory NR = Not Recommended • • = Incomplete Data

Chemical Name	Pipe & Fitting Materials Recommended Max. Temp (°F)			Seal Materials Recommended Max. Temp. (°F)		
	ABS	PVC	CPVC	Viton ®	EPDM	Neoprene
Terpenes	NR	• •	NR	• •	• •	• •
Tetrachloroethylene	NR	NR	NR	200	NR	NR
Tetraethyl Lead	NR	73	• •	73	NR	• •
Tetrahydrodurane	NR	NR	NR	• •	• •	• •
Tetrahydrofuran	NR	NR	NR	NR	NR	NR
Tetralin	NR	NR	NR	NR	NR	NR
Tetra Sodium Pyrophosphate	• •	140	180	• •	• •	• •
Texanol	• •	• •	NR	• •	• •	• •
Thionyl Chloride	NR	NR	NR	• •	• •	NR
Thread Cutting Oils	73	73	• •	73	NR	• •
Titanium Tetrachloride	NR	NR	NR	185	NR	NR
Toluene, Toluol	NR	NR	NR	73	NR	NR
Toluene-Kerosene, 25%-75%	NR	NR	NR	73	NR	NR
Tomato Juice	73	73	73	200	200	140
Toxaphene-Xylene, 90%-100%	NR	NR	NR	73	NR	NR
Transformer Oil	NR	140	180	200	NR	73
Transmission Fluid, Type A	NR	NR	180	200	NR	73
Tributyl Phosphate	NR	NR	NR	NR	73	NR
Tributyl Citrate	NR	NR	NR	NR	73	73
Trichloroacetic Acid, ≤ 20%	NR	140	NR	NR	NR	NR
Trichloroethane	NR	NR	NR	185	NR	NR
Trichloroethylene	NR	NR	NR	185	NR	NR
Triethanolamine	73	73	73	NR	160	NR
Triethylamine	NR	73	NR	200	160	73
Trimethylpropane	NR	73	• •	• •	180	160
Trisodium Phosphate	73	140	180	185	73	73
Turpentine	NR	140	NR	150	NR	NR
Urea	73	140	180	185	200	140
Urine	140	140	180	73	200	140
Vaseline	NR	NR	NR	73	NR	140
Vegetable Oil	73	140	NR	200	NR	73
Vinegar	73	140	180	200	140	NR
Vinyl Acetate	NR	NR	NR	NR	73	NR
Water	140	140	180	200	200	160
Water, Acid Mine	140	140	180	• •	200	200

Acrylonitrile-Butadiene-Styrene Polyvinyl Chloride Type 1 Grade 1 Chlorinated Polyvinyl Chloride Type IV Grade 1
Flourocarbon Elastomer (Viton ® is a registered trademark of the DuPont Co.) Ethylene Propylene Diene Monomer
** Maximum recommended temperature, for chemical resistance, under normal conditions. § Non-pressure, vent-only, applications when chemical is in gas form.

Chemical Resistance

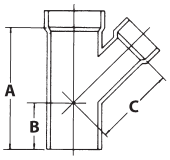
The following table gives the chemical resistance of ABS, PVC and CPVC thermoplastic piping materials and three commonly used seal materials. The information shown is based upon laboratory tests conducted by the manufacturers of the materials, and it is intended to provide a general guideline on the resistance of these materials to various chemicals. **NOTICE:** This table is not a guarantee, and any piping systems using products made of these materials should be tested under actual service conditions to determine their suitability for a particular purpose. See website for most current data: www.charlottepipe.com

Number = Maximum Recommended Temp. (°F)** CF = Consult Factory NR = Not Recommended • • = Incomplete Data

Chemical Name	Pipe & Fitting Materials Recommended Max. Temp (°F)			Seal Materials Recommended Max. Temp. (°F)		
	ABS	PVC	CPVC	Viton ®	EPDM	Neoprene
Water, Deionized	140	140	180	200	200	200
Water, Demineralized	140	140	180	200	200	200
Water, Distilled	140	140	180	200	200	200
Water, Potable	140	140	180	200	200	200
Water, Salt	140	140	180	200	200	200
Water, Sea	140	140	180	200	200	200
Water, Sewage	140	140	180	200	200	200
Water, Spa	NR	140	180	200	200	200
Water, Swimming Pool	140	140	180	200	200	200
WD 40	NR	• •	NR	• •	• •	• •
Whiskey	NR	140	180	140	200	140
White Liquor	73	140	180	180	200	140
Wines	NR	140	180	140	170	140
Xylene	NR	NR	NR	150	NR	NR
Zinc Acetate	• •	140	180	73	180	160
Zinc Bromide	• •	140	180	• •	• •	• •
Zinc Carbonate	120	• •	180	73	73	73
Zinc Chloride	120	140	180	200	180	180
Zinc Nitrate	120	140	180	200	180	• •
Zinc Phosphate	• •	• •	180	73	73	73
Zinc Sulfate	• •	140	180	200	180	140

Acrylonitrile-Butadiene-Styrene Polyvinyl Chloride Type 1 Grade 1 Chlorinated Polyvinyl Chloride Type IV Grade 1
Flourocarbon Elastomer (Viton ® is a registered trademark of the DuPont Co.) Ethylene Propylene Diene Monomer
** Maximum recommended temperature, for chemical resistance, under normal conditions. § Non-pressure, vent-only, applications when chemical is in gas form.

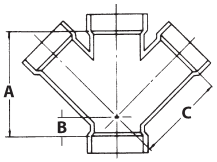
PART NO. 603



Wye, Street, Reducing
(45° Wye)
SPIGOT X HUB X HUB

SIZE	A	B	C
3 x 3 x 1½ (PVC)	5¾	2	4 7/32
3 x 3 x 2	6½	2⅜	4⅝
4 x 4 x 2 (PVC)	6 23/32	2⅛	5 15/64
4 x 4 x 3	8⅜	2 13/16	6

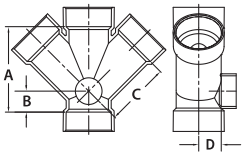
PART NO. 611



Double Wye
(Double 45° Wye)
ALL HUB

SIZE	A	B	C
1½ (PVC)	4	1⅛	2⅞
1½ (ABS)	3 15/16	1 5/32	2 27/32
2 (PVC)	5	1⅜	3⅝
2 (ABS)	5	1½	3 11/16
3 (PVC)	6⅝	1⅝	5
3 (ABS)	6 17/32	1 9/16	5
4 (PVC)	8¼	1⅞	6⅜
4 (ABS)	8 5/32	1 15/16	6 5/16
6 (PVC)	10 3/16	1¾	8 7/16
8(F) (PVC)	19 1/16	4⅞	13⅝
10(F) (PVC)	22 1/16	5 11/16	16¼
12(F) (PVC)	19 5/16	6⅞	25⅞
14(F) (PVC)	28 7/16	7⅛	20⅜

PART NO. PVC 611S

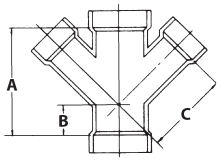


Double Wye with 2″ Side Inlet
(Double 45° Wye)
ALL HUB

SIZE	A	B	C	D
3 x 3 x 3 x 2 (PVC)	6⅝	1⅝	5	1¾

(F) Fabricated
** Assembled from two molded components.
Note: If PVC or ABS is not listed for a specific size, that size fitting is available in PVC and ABS materials, and the dimensions listed are the same for both materials.

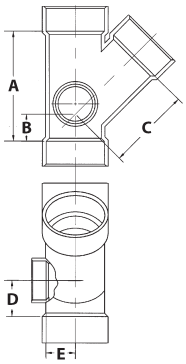
PART NO. 612



Double Wye, Reducing
(Double 45° Wye)
ALL HUB

SIZE	A	B	C
2 x 2 x 1½ x 1½ (PVC)	4⅜	1 1/16	3 7/16
2 x 2 x 1½ x 1½ (ABS)	4 5/16	31/32	3½
3 x 3 x 1½ x 1½ (PVC)	4¼	½	4 5/16
3 x 3 x 2 x 2	4 15/16	⅞	4⅝
4 x 4 x 2 x 2 (PVC)	5	⅜	5 9/16
4 x 4 x 3 x 3 (PVC)	6⅝	1 1/16	6
4 x 4 x 3 x 3 (ABS)	6 9/16	1	6 1/32
6 x 6 x 4 x 4** (PVC)	10⅛	1¾	10 3/16
8 x 8 x 4 x 4(F) (PVC)	10 1/16	13/16	10 13/16
8 x 8 x 6 x 6(F) (PVC)	13	1½	12⅝
10 x 10 x 4 x 4(F) (PVC)	11 3/16	2 7/16	14
10 x 10 x 6 x 6(F) (PVC)	14 15/16	¾	14⅝
10 x 10 x 8 x 8(F) (PVC)	18	3 7/16	15 1/16
12 x 12 x 4 x 4(F) (PVC)	11 13/16	1	14
12 x 12 x 6 x 6(F) (PVC)	15 11/16	7/16	17⅛
12 x 12 x 8 x 8(F) (PVC)	18⅞	3 3/16	16½
12 x 12 x 10 x 10(F) (PVC)	21 11/16	3⅞	18 1/16
14 x 14 x 4 x 4(F) (PVC)	12¾	1 7/16	15 3/16
14 x 14 x 6 x 6(F) (PVC)	15	1	16 3/16
14 x 14 x 8 x 8(F) (PVC)	19	2 7/16	17 19/32
14 x 14 x 10 x 10(F) (PVC)	21⅞	4	18¾
14 x 14 x 12 x 12(F) (PVC)	25 3/16	5	19⅞
16 x 16 x 4 x 4(F) (PVC)	12 7/16	2¼	17 1/32
16 x 16 x 6 x 6(F) (PVC)	15 9/16	1 7/32	17 21/32
16 x 16 x 8 x 8(F) (PVC)	18¾	1½	18 3/16
16 x 16 x 10 x 10(F) (PVC)	21 9/16	1 9/16	20⅝
16 x 16 x 12 x 12(F) (PVC)	26 1/16	4 7/16	21¾
16 x 16 x 14 x 14(F) (PVC)			

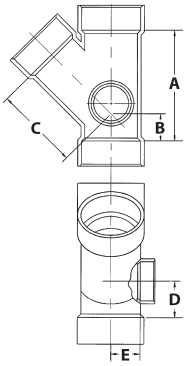
PART NO. PVC 625



Wye with Left Side Inlet
ALL HUB

SIZE	A	B	C	D	E
3 x 3 x 3 x 2 (PVC)	6⅝	1⅝	5	2¼	1¾
4 x 4 x 4 x 2 (PVC)	8¼	1⅞	6⅜	2½	3 5/16

PART NO. PVC 626



Wye with Right Side Inlet
ALL HUB

SIZE	A	B	C	D	E
3 x 3 x 3 x 2 (PVC)	6⅝	1⅝	5	2¼	1¾
4 x 4 x 4 x 2 (PVC)	8¼	1⅞	6⅜	2½	3 5/16

LIMITED WARRANTY

Charlotte Pipe and Foundry Company® (Charlotte Pipe®) Products are warranted to be free from manufacturing defects and to conform to currently applicable ASTM standards for a period of five (5) years from date of delivery. Buyer's remedy for breach of this warranty is limited to replacement of, or credit for, the defective product. This warranty excludes any expense for removal or reinstallation of any defective product and any other incidental, consequential, or punitive damages. **This limited warranty is the only warranty made by seller and is expressly in lieu of all other warranties, express and implied, including any warranties of merchantability and fitness for a particular purpose.** No statement, conduct or description by Charlotte Pipe or its representative, in addition to or beyond this Limited Warranty, shall constitute a warranty. This Limited Warranty may only be modified in writing signed by an officer of Charlotte Pipe.

This Limited Warranty will not apply if:

1) The Products are used for purposes other than their intended purpose as defined by local plumbing and building codes, and the applicable ASTM standard.
2) The Products are not installed in good and workmanlike manner consistent with normal industry standards; installed in compliance with the latest instructions published by Charlotte Pipe and good plumbing practices; and installed in conformance with all applicable plumbing, fire and building code requirements.
3) This limited warranty does not apply when the products of Charlotte Pipe are used with the products of other manufacturers that do not meet the applicable ASTM or CISPI standards or that are not marked in a manner to indicate the entity that manufactured them.
4) In hubless cast iron installations, this warranty will not apply if products are joined with unshielded hubless couplings. Charlotte Pipe requires that its hubless cast iron pipe and fittings be joined only with shielded hubless couplings manufactured in accordance with CISPI 310, ASTM C 1277 and certified by NSF® International or with Heavy Duty Couplings meeting ASTM C 1540.
5) The Products fail due to defects or deficiencies in design, engineering, or installation of the piping system of which they are a part.
6) The Products have been the subject of modification; misuse; misapplication; improper maintenance or repair; damage caused by the fault or negligence of anyone other than Charlotte Pipe; or any other act or event beyond the control of Charlotte Pipe.
7) The Products fail due to the freezing of water in the Products.
8) The Products fail due to contact with chemical agents, fire stopping materials, thread sealant, plasticized vinyl products, or other aggressive chemical agents that are not compatible.
9) Pipe outlets, sound attenuation systems or other devices are permanently attached to the surface of Charlotte® PVC, ABS or CPVC products with solvent cement or adhesive glue.

Charlotte Pipe products are manufactured to the applicable ASTM or CISPI standard. Charlotte Pipe and Foundry **cannot** accept responsibility for the performance, dimensional accuracy, or compatibility of pipe, fittings, gaskets, or couplings not manufactured or sold by Charlotte Pipe and Foundry.

Any Charlotte Pipe products alleged to be defective **must** be made available to Charlotte Pipe at the following address for verification, inspection and determination of cause:

Charlotte Pipe and Foundry Company
Attention: Technical Services
2109 Randolph Road
Charlotte, North Carolina 28207

Purchaser must obtain a return materials authorization and instructions for return shipment to Charlotte Pipe of any product claimed defective or shipped in error.

Any Charlotte Pipe product **proved** to be defective in manufacture will be replaced F.O.B. point of original delivery, or credit will be issued, at the discretion of Charlotte Pipe.

4/24/15

⚠ WARNING

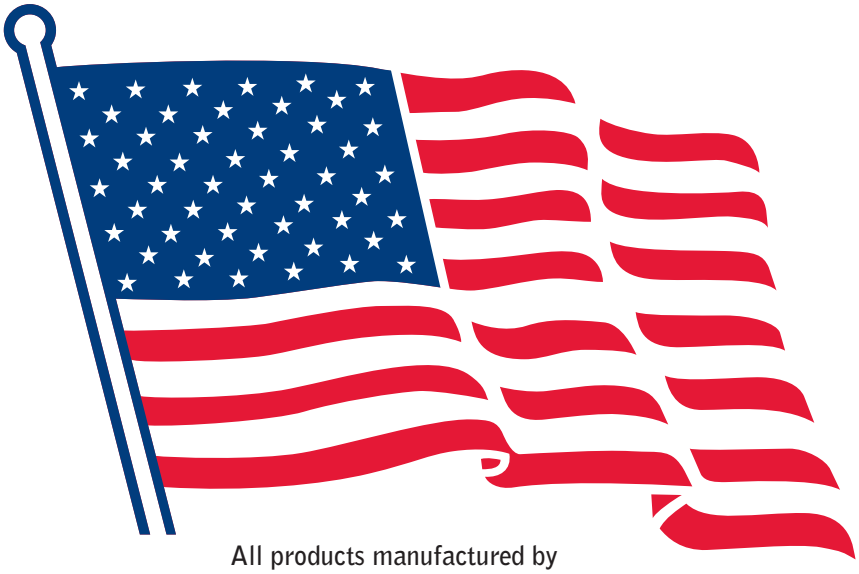
Testing with or use of compressed air or gas in PVC / ABS / CPVC / Cast Iron pipe or fittings can result in explosive failures and cause severe injury or death.

- NEVER test with or transport/store compressed air or gas in PVC / ABS / CPVC / Cast Iron pipe or fittings.
- NEVER test PVC / ABS / CPVC / Cast Iron pipe or fittings with compressed air or gas, or air over water boosters.
- ONLY use PVC / ABS / CPVC / Cast Iron pipe or fittings for water or approved chemicals.
- Refer to warnings on PPFA's website and ASTM D 1785.

CHARLOTTE
PIPE AND FOUNDRY COMPANY®

PO BOX 35430
CHARLOTTE
NORTH CAROLINA 28235
PHONE (704) 348-6450
(800) 438-6091
FAX (800) 553-1605
WWW.CHARLOTTEPIPE.COM

MADE IN USA



All products manufactured by
Charlotte Pipe and Foundry Company
are proudly made in the U.S.A.